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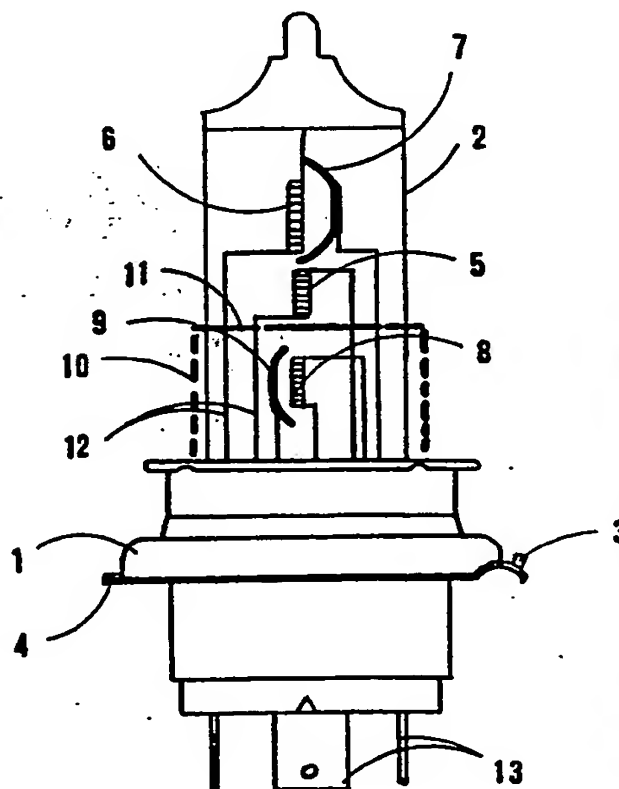
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(54) Title: **HEAD LAMP, IN PARTICULAR HEADLIGHT FOR CARS, PROVIDED WITH SEVERAL FILAMENTS ADAPTED TO EMIT BEAMS OF WHITE AND/OR COLOURED LIGHT TO BE USED AS SEALED BEAM LIGHT AND FOGLIGHT**

(57) Abstract

Head lamp comprising a first filament (5) located at a focal distance from the reflecting parabola and designed to emit a country light beam, a second filament (6) being axially located with respect to the former and being screened so as to provide a dipped headlight, and a third filament (8) in depending upon the former and adapted to selectively emit a beam of white or coloured light, thus acting as foglight.



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"HEAD LAMP, IN PARTICULAR HEADLIGHT FOR CARS, PROVIDED WITH SEVERAL FILAMENTS ADAPTED TO EMIT BEAMS OF WHITE AND/OR COLOURED LIGHT TO BE USED AS SEALED BEAM LIGHT AND FOGLIGHT"

This invention relates to the field of lighting fittings, and more particularly to a headlamp designed for cars and motor vehicles and adapted to selectively emit a beam of white or coloured light, thus either acting as country beam or dipped headlight or fog light.

As known the forward lamp assembly of cars and motor vehicles, in compliance with technical as well as legislative rules practically unvarying in all industrialized countries, are designed to emit a country light beam essentially parallel to the roadway (driving or country beam) and a second light beam deviated towards the roadway (dipped headlight) to be used when two motor vehicles cross each other or where there is a sufficient lighting. Apart a third light (side light) having as main purpose the definition of the overall cross-dimension of the motor vehicle is provided.

In case of fog or other atmospheric or accidental causes seriously reducing the visibility, the conventional head lights are insufficient or inadequate, whereby the use of additional head lamps acting as fog lights spread to a great extent all over Central-North Europe (North Italy included).

Such head lamps, that not always attain the object, must be mounted ahead under the main headlights

and have besides a high cost several drawbacks such as the easiness of being damaged or broken during parking, the exposure to splashes of mud, dust, and the collision of stones or other foreign bodies raised by the wheels during the run.

An object of the invention is to provide a head lamp of the mentioned type which can be easily mounted in lieu of the existing lamps without any modification in the parabolic reflecting surface of the head lamp, thus allowing an additional, eventually coloured light beam to be emitted in addition or replacement of the ordinary night beams.

According to the invention a head lamp is provided comprising in combination a cap provided with a mounting to arrange the lamp in a restrained position with respect to the reflecting parabola of the headlight, said mounting being provided in turn with lugs engaged by the respective leads, a bulb secured to said cap, and a set of three filaments located within the bulb, one of which in focal position for the emission of a country light beam, the second in an out-of-centre position associated to a cup for the emission of a dipped light beam, the third complementary filament independent of the former being screened by a further cup preferably directed downwards and designed to emit a white or coloured fog light beam.

According to a feature of the invention said fog light beam provided by the third filament is coloured by a corresponding coloured area provided on a surface of the bulb which is optically associated to said complementary filament.

The invention will be now described with reference to the accompanying drawing showing in a non-limitative way a preferred embodiment of the invention.

In the drawing:

Fig. 1 shows schematically a head lamp according to the invention in side view and in enlarged scale;

Fig. 2 is a view similar to Fig. 1 showing a second version of the head lamp.

With reference to Fig. 1, a mounting cap of a head lamp for cars and motor vehicles is generally designated by 1 and carries a bulb 2 of transparent dielectric material. Cap 1 is provided with plugs 3 and mounting flanges 4 having a shape such as to secure correctly the lamp within the reflecting parabola of the headlight. All these members are well-known and do not need a particular description.

A filament 5 is located within bulb 2 in a position such that when the lamp is in its operating position, filament itself coincides with the focal point of the reflecting parabolic surface, thus causing a light beam to be emitted which is parallel to the optical axis of the head lamp (so-called country beam). A second filament 6 cooperating with shielding cup 7 and located ahead with respect to the former emits a light beam directed downwards (dipped headlight).

The invention provides in bulb 2 a third additional filament 8 having the function of either integrating or replacing the others, thus meeting in particular the necessity of the additional fog lights. The light emitted by third filament 8 is screened by

cup 9 which preferably has the concavity directed downwards.

As mentioned above third filament 8 has the function of emitting a light beam which either integrates the beam projected by conventional filaments 5 and 6 or replaces it in particular in case of failure of the filaments. In case of fog light function, the light generated by third filament 8 can advantageously be coloured according to a suitable chromatic tonality, for example yellow. This colouring can be provided by a circular screening 10 which is shown dashed in the drawing and either is arranged in the same bulb 2 or provided separately from the latter and located in the optical area associated to filament 8. Such screening can be formed of one or more lenses.

In order to avoid optical interferences between light beam emitted by filament 8 and that of the other two filaments 5 and 6, a partition 11 between filaments 6 and 8 is provided. Of course, such partition 11 is provided with screened holes crossed by rheophores 12 connected to lugs 13 which in turn are connected to the control means, said partition being preferably provided either with louvers compensating the thermal expansion or other suitable technical means.

In Fig. 2 a modification in the above described head lamp is shown. In this case screening cup 9 of additional filament 8 is replaced by cup 14 having geometric and optical characteristics such as to allow a light beam having the same function as above mentioned to be emitted.

In the annexed drawing filaments have, for

example, a rectilinear extension coinciding with the geometric axis of the head lamp but it is self-evident that filaments can have a cross extension to said axis and an inclined or curved extension as well.

5 It is obvious that the head lamp according to the invention can be constructed whether, in the conventional or standard or halogen form. As far as filling gas, shape and size of the bulb, mounting cap, supply voltage, light power, choice of materials a.s.o.  
10 is concerned, reference can be made to the present technology with the only modification concerning an additional connecting lug 13 associated to additional filament 8.

15 In case of head lamps with only one filament, i.e. either only for country beam or dipped beam, only one additional lug associated to the fog light filament should be added.

20 In the above description reference has been made to head lamps for cars and motor vehicles but it should be understood that the head lamp according to the invention is fit for other lighting systems such as those for theatre, TV and cinematograph shot a.s.o.

25 This invention has been illustrated and described according to a preferred embodiment, however, it should be understood that constructing modifications and changes can be made without departing from the scope of the invention.

## CLAIMS

1. Head lamp, in particular for motor vehicle headlights, characterized in that it is provided with a pair of filaments adapted to selectively emit a country and/or dipped light beam and at least a third additional filament adapted to either emit independently of or jointly with the former a light beam having the function of fog light.

2. The head lamp of claim 1, characterized in that such additional filament is operatively and optically independent of and separated from the other two conventional filaments.

3. The head lamp of claims 1 and 2, characterized in that the third filament is arranged in the optical axis of the lamp, a partition against interferences being provided which is perpendicular to the optical axis and located above said filament.

4. The head lamp of claims 1 to 3, characterized in that the third filament cooperates with a screening cup arranged with the concavity directed downwards.

5. The head lamp of claims 1 to 4, characterized in that the screening cup of the additional filament consists of a dome-shaped surface arranged between said filament and the lamp cap.

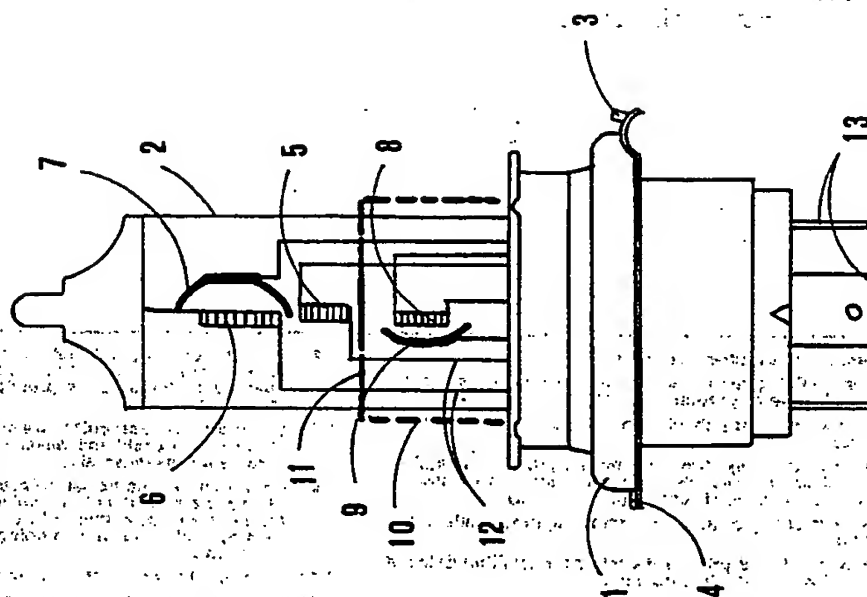
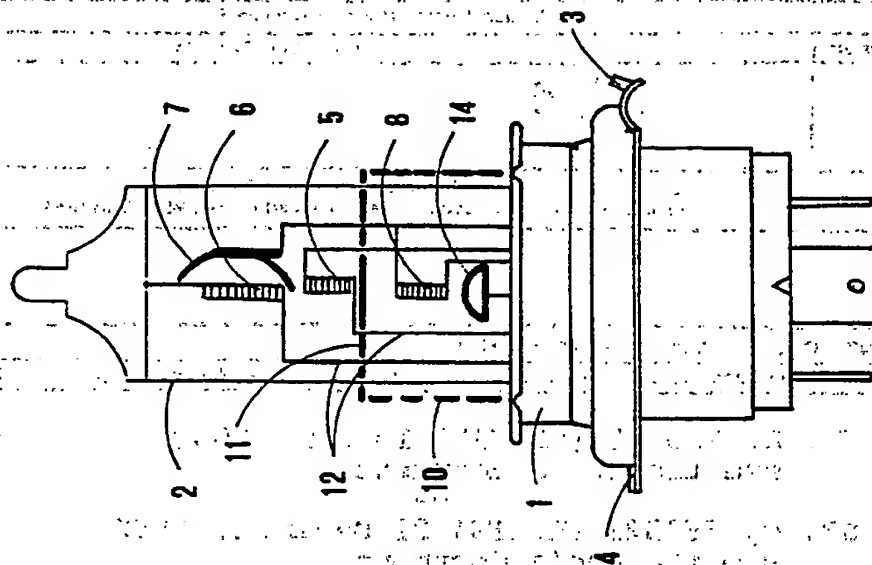
6. The head lamp of claims 1 to 5, characterized in that the filament assembly is arranged within a conventional bulb provided with an area optically associated to the third filament and having a suitable colouring according to the fog light characteristics of the beam emitted by said filament.

7. Head lamp, in particular for motor vehicle headlights, characterized in that it is provided with at least one filament adapted to emit a country light



beam and/or a dipped light beam and at least a second filament adapted to emit either independently of or jointly with the former a fog light beam.

5 8. Head lamp for lighting systems, in particular for cars and motor vehicles according to claims 1 to 6, essentially as described and illustrated.



**SUBSTITUTE SHEET**

# INTERNATIONAL SEARCH REPORT

International Application No PCT/IT 87/00030

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) * According to International Patent Classification (IPC) or to both National Classification and IPC IPC <sup>4</sup> :      F 21 M 3/10; H 01 K 9/08																				
<b>II. FIELDS SEARCHED</b> <div style="text-align: right; font-size: small;">Minimum Documentation Searched ?</div> <table style="width: 100%; border: none;"> <tr> <td style="width: 25%; border: none;">Classification System</td> <td style="border: none;">Classification Symbols</td> </tr> <tr> <td style="border: none; vertical-align: top;">IPC<sup>4</sup></td> <td style="border: none; vertical-align: top;">F 21 M H 01 K</td> </tr> </table> <div style="text-align: center; font-size: x-small; margin-top: 5px;">Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched *</div>			Classification System	Classification Symbols	IPC <sup>4</sup>	F 21 M H 01 K														
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IPC <sup>4</sup>	F 21 M H 01 K																			
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT *</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%; font-size: x-small;">Category *</th> <th style="width: 70%; font-size: x-small;">Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup></th> <th style="width: 20%; font-size: x-small;">Relevant to Claim No. <sup>13</sup></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">X</td> <td>FR, A, 726975 (KIEFER) 10 June 1932 see the whole document</td> <td style="text-align: center;">1, 8</td> </tr> <tr> <td style="text-align: center;">X</td> <td>DE, C, 860521 (LIRTZ) 22 December 1952 see the whole document</td> <td style="text-align: center;">1, 8</td> </tr> <tr> <td style="text-align: center;">A</td> <td>CH, A, 145549 (LANZ) 16 May 1931 see the whole document</td> <td style="text-align: center;">1-3, 6, 7</td> </tr> <tr> <td style="text-align: center;">A</td> <td>DE, A, 2757713 (BUCHLEITNER) 28 June 1979 see page 6, lines 23-31; figure 1</td> <td style="text-align: center;">1, 4, 7</td> </tr> <tr> <td style="text-align: center;">A</td> <td>DE, A, 2134714 (BERGER) 25 January 1973 see figures</td> <td style="text-align: center;">5</td> </tr> </tbody> </table>			Category *	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>	X	FR, A, 726975 (KIEFER) 10 June 1932 see the whole document	1, 8	X	DE, C, 860521 (LIRTZ) 22 December 1952 see the whole document	1, 8	A	CH, A, 145549 (LANZ) 16 May 1931 see the whole document	1-3, 6, 7	A	DE, A, 2757713 (BUCHLEITNER) 28 June 1979 see page 6, lines 23-31; figure 1	1, 4, 7	A	DE, A, 2134714 (BERGER) 25 January 1973 see figures	5
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<div style="display: flex; justify-content: space-between; font-size: x-small;"> <div style="width: 45%;"> <p>* Special categories of cited documents: <sup>10</sup></p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"A" document member of the same patent family</p> </div> </div>																				
<b>IV. CERTIFICATION</b> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;">           Date of the Actual Completion of the International Search  <b>5th August 1987</b> </td> <td style="width: 50%; border: none;">           Date of Mailing of this International Search Report  <b>31 AUG 1987</b> </td> </tr> <tr> <td style="width: 50%; border: none;">           International Searching Authority  <b>EUROPEAN PATENT OFFICE</b> </td> <td style="width: 50%; border: none;">           Signature of Authorized Officer  <b>L. ROSSI</b> </td> </tr> </table>			Date of the Actual Completion of the International Search <b>5th August 1987</b>	Date of Mailing of this International Search Report <b>31 AUG 1987</b>	International Searching Authority <b>EUROPEAN PATENT OFFICE</b>	Signature of Authorized Officer <b>L. ROSSI</b>														
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ANNEX TO THE INTERNATIONAL SEARCH REPORT ON

INTERNATIONAL APPLICATION NO.

PCT/IT 87/00030 (SA 16957)

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR-A- 726975		None	
DE-C- 860521		None	
CH-A- 145549		None	
DE-A- 2757713	28/06/79	None	
DE-A- 2134714	25/01/73	None	

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